

DOCUMENT RESUME

ED 221 580

TM 820 609

AUTHOR Jacobs, Jan
TITLE Research Reports, Media Coverage and the Beliefs of Parents: An Empirical Study.
PUB DATE Mar 82
NOTE 12p.; Paper presented at the Annual Meeting of the American Educational Research Association (66th, New York, NY, March 19-23, 1982).
EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Elementary Secondary Education; Longitudinal Studies; *Mass Media; *Mathematics Achievement; *Parent Attitudes; Parent Influence; Research Reports; Research Utilization; *Sex Differences; Social Bias
IDENTIFIERS Likert Scales

ABSTRACT

A longitudinal study designed to assess parental influence on achievement expectancies provided a unique opportunity to compare data collected before and after the media coverage of the Benbow and Stanley report discussing males' superior mathematical ability. A subsample of 231 parents of math-able children initially in 5th, 7th and 9th grades was selected and the present data were collected 2 years later. A questionnaire consisting of both seven-point Likert-scaled items and open-ended questions was used to assess the impact of a particular media event on parent's attitudes and expectancies. The effect of being informed about the research report of Benbow and Stanley did seem to change parents' attitudes about these issues. Media absorption involves a self-selection according to previous attitude. It appears that hearing about the report may have had the effect of confirming mothers' beliefs that their daughters are not as able in math as their sons, while it put fathers of girls in a position of challenging the "evidence" for their daughters. The opposite happened in the case of general stereotypes for males: fathers of sons had their beliefs confirmed, while mothers did not. (Author/PN)

* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *

ED221580

Research Reports, Media Coverage
and the Beliefs of Parents:
An Empirical Study

Jan Jacobs
University of Michigan

Paper presented at the annual meeting of the American
Educational Research Association, New York, March 1982.

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION
CENTER (ERIC)

✗ This document has been reproduced as
received from the person or organization
originating it.
□ Minor changes have been made to improve
reproduction quality.

• Points of view or opinions stated in this docu-
ment do not necessarily represent official NIE
position or policy.

"PERMISSION TO REPRODUCE THIS
MATERIAL HAS BEEN GRANTED BY

J. Jacobs

TO THE EDUCATIONAL RESOURCES
INFORMATION CENTER (ERIC)."

News is the word we use for the information which people receive second-hand about worlds which are not available to their own experience (Molotch and Lester, 1974). Out of a vast number of occurrences, only a few happenings are considered important enough to become news. As we all know, the information generated by social science researchers is seldom considered newsworthy. However, once in a while the media cover a research report, allowing us to share our findings with the people we think should be most interested. Such an event occurred shortly after the release of the Benbow and Stanley article in Science (December 1980) last year. The range of media coverage has already been described in the papers you have just heard.

Unfortunately, the power of the media lies in something sociologists call the "objectivity assumption" to which most of us subscribe. This assumption states that there is a particular world "out there" and that a given account of an event reflects that world with some accuracy. People read newspapers and magazines, and listen to radio and television broadcasts in order to find out about the objective state of that world. Because of the media's ability to influence people by determining what picture of the world they will see, many of us feel that the media have a powerful effect on the beliefs of individuals and communities. However, there is little hard evidence to back up that "feeling", because no one can second-guess what will be news next, in order to collect data before the event. Such an opportunity presented itself after the news coverage of Benbow and Stanley's report discussing males' superior mathematical ability. A longitudinal study designed to assess parental influence on achievement expectancies was already underway, providing a unique opportunity to compare data collected before and after the media coverage of the Benbow and Stanley report. A subsample of 231 parents of math-able children who had been in the 5th, 7th and 9th grades at the beginning of the study was selected. The data reported in this paper were collected two years later when the children were in the 7th, 9th, and 11th grades. A questionnaire consisting of both seven-point Likert-scaled items and open-ended questions was used to assess parent's attitudes and expectancies.

Because of limited time, this paper will only address the impact of the media coverage on parents' beliefs about three general issues. The first is parents' beliefs about the effort and ability required for their children to do well in math. In other words, do girls have to work harder to succeed in math? The second question concerns the utility of math for the future for females and males. Will girls need math to get a job? The final issue raised with parents was whether they thought males were mathematically superior and why boys outnumber girls in advanced mathematics courses.

Research Design.

The questionnaires were mailed to parents about three months after the original research report appeared in Science (Benbow and Stanley, 1980). Questions were familiar to parents because they appeared in the same format as they had on the previous protocols. A question placed on the last page of the form described the media coverage of the research and asked if parents had heard about it. Approximately one quarter of the respondents (N=57) had heard about the research. Of these people, 68% had seen a magazine article about it, 18% read about it in the newspaper, and smaller numbers heard about it on the radio, television, or from a friend. Many people indicated that they heard about the report from several sources. The beliefs of those who heard about the Benbow and Stanley report from the media will be compared here with those who did not. For the sake of clarity, those who heard about the report will be referred to as the "informed" group and those who did not, as the "uninformed" group throughout this paper. Mothers' and fathers' responses were analyzed separately, and the groups were further divided by the sex of the child who participated in this study. Two types of analyses were performed for each issue: (1) comparisons by sex of child within each group, and (2) comparisons between the informed and uninformed groups.

In order to test the hypothesis that parents in the informed group may have been different from those in the uninformed group to begin with, analyses of variance were performed on all pretest variables for the two groups. none were significantly different. Analyses of covariance were also used in an attempt to control for any initial pretest differences. Finally, the SES variable of occupation was compared for the groups, and they look remarkably similar. Approximately 22% of the mothers were professionals in both groups, while 48% of the informed mothers were homemakers and 35% of the uninformed group were homemakers. Others in both groups held clerical or sales positions. The fathers were predominantly professionals (83% in the informed group and 80% in the uninformed group). Other fathers were in sales, service or were craftsmen.

Results and Discussion.

The first issue concerned parents' attitudes about the effort and ability required by their children to do well in math. Questions included items about the child's math abilities, the effort necessary to succeed, the parents' perceptions about the difficulty of math for their child, and parents' expectancies for their child's future success in math.

I will talk about mothers first. The pattern of

results suggests that informed mothers of daughters, or those who heard about the media coverage, feel that their daughters have less math ability, will have less success in the future and that math is more difficult for them, than any other group. I would like to turn your attention to Table 1 to illustrate this pattern. Analyses of covariance were performed, controlling for the responses given on the questionnaires before the media coverage of the Benbow and Stanley findings.

INSERT TABLE 1 ABOUT HERE

The data for questions about perceived difficulty of math for the child are presented as an example, although the pattern is present throughout the ability and effort items. As you can see, the contrast of informed mothers to uninformed mothers (labeled awareness on your table) is not significant by itself, but the interaction of awareness and sex of child is. This is because informed mothers of girls think that math is much more difficult for their daughters than informed mothers of boys, while uninformed mothers of girls look about the same as uninformed mothers of boys. The same trend existed at the time of the pretest but it became more extreme after the media coverage.

I will turn now to fathers' attitudes about the same issue of ability and effort for math. Generally, fathers of girls feel that their daughters have slightly less ability than fathers of sons. However, the overall trend for fathers is rather unexpected. Informed fathers of girls changed their beliefs in the direction of thinking their daughters had more ability at the time of the posttest, while uninformed fathers changed in the opposite direction. They felt that their daughters had less ability over time. Look now at Table 2.

INSERT TABLE 2 ABOUT HERE

The questions asked about parents' perceptions of their child's ability in math are presented as an example. This illustrates the surprising finding that informed fathers believed that their children had more ability by the time of the posttest, with informed fathers of girls changing the most. The uninformed fathers' beliefs became more stereotyped. If they had girls they believed their daughters had less ability by the time of the posttest. This pattern was apparent throughout the ability and effort questions for fathers, although differences between the groups were seldom significant.

To summarize the findings about parents' attitudes concerning effort and ability; although differences were not always found between the informed and uninformed groups, a striking overall pattern did emerge. The informed group appeared to be changing slightly more than the uninformed group, with informed fathers' views becoming more similar for girls and boys, while informed mothers' responses became more differentiated depending on the sex of their child. In other words, informed mothers of girls became more conscious of differences after hearing about the research findings and informed fathers became more egalitarian. The sentiment of informed mothers is captured in open-ended responses from mothers of daughters: "Boys have a tendency to understand the principles (of math) but girls are trying to just memorize the principles; and another: (boys and girls have) "basic, but slight, differences between inherited abilities."

The second issue concerned the utility of math for the future for boys and girls. Mothers will be discussed first. Up until now, the questions discussed have been concerned with parents' attitudes about their own child's achievement. They were also asked about how useful males and females in general found math in their adult lives. To this question, all mothers responded that math was more useful for males than for females, and there were no differences between the groups or by sex of child. The results for mothers' perceptions of the future utility of math are presented in Table 3.

INSERT TABLE 3 ABOUT HERE

Every group looked very similar. All mothers changed from the time of the pretest in the direction of finding math slightly more useful for males in their adult lives.

When fathers were asked about the future utility of math, more differences emerged than was the case with mothers. When fathers were talking about their own children, a main effect for sex was evident. All fathers felt that math was more useful if they had sons rather than daughters. But, informed fathers of sons felt that it was even more useful than uninformed fathers of sons. When asked the question about usefulness for males in general, the informed fathers of sons stand out even more.

This is illustrated in Table 3. You can see that fathers form a sharp contrast to the homogeneity of mothers for this question. All fathers of boys think math is more useful for males in general than fathers of girls. An interaction of awareness of the media coverage and sex of child was also found. In other words, informed fathers of

boys stand out as thinking that math is much more important for males than females. It appears that hearing about the media coverage confirmed the stereotyped attitudes of fathers of sons.

In general, it can be seen that the media coverage made no difference to mothers' beliefs about the future value of math, which were already sex-typed. In contrast, fathers' views were also stereotyped to begin with, but knowledge of the media coverage coupled with having sons, seemed to confirm and strengthen fathers' views that math is more useful for males.

The final question to be discussed here concerns parents' sex-typed beliefs about achievement. I will first focus on mothers. When mothers were asked directly, "Who does better in advanced math classes?" all groups said that males and females do equally well. If you turn your attention to Table 4, you can see that there are no differences between informed and uninformed mothers; and the sex of the child does not seem to make a difference.

INSERT TABLE 4 ABOUT HERE

When this question was asked of fathers, however, a clear difference can be seen between the groups in Table 4. In this case, fathers' views appear to have been influenced by exposure to the media coverage while the mothers' attitudes did not change. Informed fathers of sons said that males do better in advanced math classes more than informed fathers of daughters. In fact, the group of informed fathers of sons seemed to have their beliefs about male mathematical abilities confirmed. They felt that males in general do better in advanced math classes much more strongly than the uninformed fathers of boys. To summarize the issue of sex-typed beliefs about achievement, mothers believe that males and females do almost equal work in advanced math, with males doing a little bit better. Informed fathers of boys had the most stereotyped views of children's performance of all groups compared.

Parents were also asked why they thought boys outnumbered girls in advanced math courses. Here are a few examples of responses: "Boys choose more careers using math," "...males have a mechanical mind to understand the methods to find the answers to math problems." "Boys have to keep on earning a living all their lives, not just until they get married" and "Boys are more likely to be encouraged by parents, counselors and teachers."

Generally, the distribution of answers to that open-ended question supports the hypothesis that informed parents

were more aware of sex differences as an important issue than the uninformed parents. Informed parents mentioned greater value of math for the future for males only 40% of the time, while uninformed parents held that view 61% of the time. Informed parents also mentioned socializers as transmitting sex-role stereotypes and stereotyping of math abilities much more frequently than uninformed parents (26% compared to 9%). This was true for both mothers and fathers who saw the media coverage, regardless of sex of child.

Conclusion.

In conclusion, the impact of a particular media event on parents' attitudes has been discussed for three questions: (1) parents' perceptions of their child's ability and effort in math; (2) parents' perceptions of the differential utility of math for boys and girls in the future; and (3) parents' beliefs about why males take more advanced math classes than females. Generally speaking, the effect of being informed about the research report of Benbow Stanley did seem to change parents' attitudes about these issues. Informed mothers had their beliefs confirmed about the difficulty of math for their daughters and ease for their sons, while informed fathers became more convinced of their daughter's math abilities. Therefore, information that boys are mathematically superior had a confirmatory effect on mothers, while for fathers a heightened awareness of the importance of math occurred, causing them to defend their daughters' capabilities. Unfortunately, while the informed fathers may exhibit an enhanced awareness of the value of math if they have daughters, they feel more convinced than their uninformed counterparts of general stereotypes if they have sons. They feel that females do not perform as well as males in advanced classes and that math is more useful to males.

These findings are not surprising. We know that the salience of an event determines how we will interpret and remember it. We would expect parents with math-able daughters to interpret the news of superior male mathematical ability much differently than parents with sons, and mothers to interpret it differently than fathers. According to media experts, individuals' first-hand experiences are weighed against the "objectivity assumption" mentioned earlier. Media absorption involves a self-selection according to previous attitude (Bauer & Bauer, 1960). In this case, it appears that hearing about the report may have had the effect of confirming mothers' beliefs that their daughters are not as able in math as their sons, while it put fathers of girls in a position of challenging the "evidence" for their daughters. The opposite happened in the case of general stereotypes for math. Fathers of sons had their beliefs confirmed, while mothers did not.

Many parents of daughters spoke of the need to change stereotypic views of women and mathematics. One mother summed up the position succinctly when she said, "For whatever reason, boys in general seem to pick up math concepts with more ease and less methodical study. There are exceptions, however, and I would not want my daughter to feel she could not do equally well in math as her brothers." She went on to say, "Perhaps society has encouraged boys in math more than girls. I hope it is changing."

References

- Bauer, R., & Bauer, A. America, mass society and mass media, Journal of Social Issues, 16, 1960, 3-56.
- Benbow, C.P., & Stanley, J.C. Sex differences in mathematical ability: Fact or artifact? Science, vol. 210(12), 1980.
- Molotch, H., & Lester, M. Accidents, scandals, and routines: Resources for insurgent methodology. In G. Tuchman (Ed.), The tv establishment, programming for power and profit. Englewood Cliffs, NJ: Prentice-Hall, Inc., 1974.

TABLE 1.
Mother's Perceptions of Task Difficulty
for Child

	Informed		Uninformed	
	Girls	Boys	Girls	Boys
Pretest $\bar{x}$	4.14 ^a	3.32	3.92	3.59
Posttest $\bar{x}$	4.71	2.71	3.88	3.59
Analysis of Covariance, controlling for pretest				
	d.f.		F	
Awareness	1, 108		.89	
Sex of Child	1, 108		14.38***	
Sex X Awareness	1, 108		7.83**	

TABLE 2.
Father's Perceptions of Child's
Math Ability

	Informed		Uninformed	
	Girls	Boys	Girls	Boys
Pretest $\bar{x}$	5.00 ^a	5.54	4.90	5.38
Posttest $\bar{x}$	5.17	5.52	4.75	5.39
Analysis of Covariance, controlling for pretest				
	d.f.		F	
Awareness	1, 99		1.74	
Sex of Child	1, 99		2.94	
Sex X Awareness	1, 99		.41	

^aseven-point Likert scale

** $p < .01$
*** $p < .001$

TABLE 3.

Who do you believe finds math more
useful for their adult lives?

	Mothers				Fathers			
	Informed Girls	Boys	Uninformed Girls	Boys	Informed Girls	Boys	Uninformed Girls	Boys
Pretest $\bar{x}$	2.50 ^a	2.63	2.32	2.33	2.00	2.18	2.00	1.79
Posttest $\bar{x}$	2.21	2.41	2.32	2.39	2.05	1.50	1.94	1.79

Analyses of Covariance,
controlling for pretest

	d.f.	F	d.f.	F
Awareness	1, 107	1.50	1, 94	1.46
Sex of Child	1, 107	.01	1, 94	9.05**
Sex X Awareness	1, 107	1.03	1, 94	5.26*

TABLE 4.

Who does better in advanced
math classes?

	Mothers				Fathers			
	Informed Girls	Boys	Uninformed Girls	Boys	Informed Girls	Boys	Uninformed Girls	Boys
Pretest $\bar{x}$	3.43 ^a	3.27	3.49	3.63	3.57	3.73	3.50	3.52
Posttest $\bar{x}$	3.57	3.33	3.26	3.47	3.63	4.33	3.36	3.48

Analyses of Covariance,
controlling for pretest

	d.f.	F	d.f.	F
Awareness	1, 107	.37	1, 93	16.24***
Sex of Child	1, 107	.16	1, 93	9.06**
Sex X Awareness	1, 107	.07	1, 93	4.94*

^a five-point Likert scale, with 1=females and 5=males
* $p < .05$; ** $p < .01$; *** $p < .001$